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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 727,092	11/30/2000	James Anderson	72880.04795	6822

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EXAMINER

AKKAPEDDI, PRASAD R

ART UNIT PAPER NUMBER

2871

DATE MAILED: 04/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/727,092

Applicant(s)

ANDERSON ET AL.

Examiner

Prasad R Akkapeddi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 3, 16-23 and 30-41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-15 and 24-29 is/are rejected.
- 7) ☒ Claim(s) 6, 12 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of species A, claims 1-2, 4-8, 9-15, subject to possible allowance of generic claim in Paper No. 7 is acknowledged. In addition, claims 24-28 and 29 are also examined in the current office action as originally stated.

Claim Objections

2. Claims 6, 12 and 27 objected to because of the following informalities: The acronym LCoS, though spelled out in the specification, it should be spelled out completely in the claims also. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2, 7-9, 13-15, 24, 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koma (U.S. Patent No. 6,188,456) in view of Chigrinov et al. (Chigrinov) (U.S. Patent No. 5,784,139).

a. As to claims 1, 9 and 29: Koma discloses a liquid crystal display that can be applied to a light valve (Col. 8, lines 62-63) with a light source (60) that emits non-polarized light, a vertically aligned reflective liquid crystal cell (50), a first polarizer (64) positioned in the path of the light between the light source and the liquid crystal cell and a second polarizer (66) positioned in the path of the light

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reflected by the liquid crystal cell (Fig. 3). A light valve also controls the transmission of the light. Koma does not explicitly disclose that the above polarizers are of circular type. Chigrinov on the other hand in disclosing a display cell and liquid crystal light valve also discloses two polarizers and teaches the use of circular polarizers instead of plane polarizers (Col. 3, lines 50-54). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt circular polarizers instead of linear polarizers per the teachings of Chigrinov and also to achieve better color compensation in liquid crystal displays.

b. As to claims 2 and 15: Koma discloses that the light is on axis to the first polarizer, the liquid crystal cell and the second polarizer (Fig. 3). Koma does not explicitly disclose that the above polarizers are of circular type. Chigrinov on the other hand in disclosing a display cell and liquid crystal light valve also discloses two polarizers and teaches the use of circular polarizers instead of plane polarizers (Col. 3, lines 50-54). When a right circularly polarized beam is reflected off a reflector the light changes to opposite handedness. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt circular polarizers instead of linear polarizers per the teachings of Chigrinov and also to achieve better color compensation in liquid crystal displays.

c. As to claims 7-8 and 13-14: Koma discloses the vertical alignment mode reflective liquid crystal cell (region 34) with no director pre-tilt, (Fig. 2).

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- d. As to claims 24 and 28: Koma discloses a liquid crystal display cell as described above and also discloses the use of the device (title). In Fig. 3 Koma discloses the passing of light through a first polarizer (64), reflecting the light from reflective a vertically aligned liquid crystal cell (50), passing the light reflected off the bottom substrate through a second polarizer (66). . Koma does not explicitly disclose that the above polarizers are of circular type. Chigrinov on the other hand in disclosing a display cell and liquid crystal light valve also discloses two polarizers and teaches the use of circular polarizers instead of plane polarizers (Col. 3, lines 50-54). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt circular polarizers instead of linear polarizers per the teachings of Chigrinov and also to achieve better color compensation in liquid crystal displays.
5. Claims 4,10 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koma and Chigrinov as applied to claims 1, 9 and 24 above, and further in view of Borrego et al. (Borrego) (U.S.Patent No. 5,486,840).

Although a circular polarizer comprising of a combination of linear polarizer and a quarter wave retarder is quite well known, neither Koma nor Chigrinov explicitly disclose such a combination. Borrego on the other hand, explicitly states that a circular polarizer includes a linear polarizer and a quarter wave plate (Abstract) and (col. 1, lines 65-66). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made since such a combination is fairly well known in the art.

6. Claims 5, 11 and 26 rejected under 35 U.S.C. 103(a) as being unpatentable over Koma and Chigrinov as applied to claims 1, 9 and 24 above, and further in view of Conner et al. (Conner) (U.S. Patent No. 5,548,422).

Although Koma discloses the use of polarizers for light valve applications and Chigrinov discloses that these polarizers could also be circular polarizers, neither Koma nor Chigrinov disclose that one of the circular polarizers is a cholesteric film. Conner in disclosing a notch filter for a liquid crystal display device discloses the use of cholesteric polarizer as the circular polarizer (Col. 4, lines 30-32). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute a circular polarizer with a cholesteric film since the recitation in the instant claims applies to replacing one of the circular polarizers with a cholesteric film and the function of the light valve will not be affected if one uses either a circular polarizer or a cholesteric film, since the cholesteric film acts as a circular polarizer, the statement of Conner regarding the use of cholesteric film is quite appropriate.

7. Claims 6, 12 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koma and Chigrinov as applied to claim 1, 9 and 24 above, and further in view of Levola (U.S. Patent No. 6,445,433).

Neither Koma nor Chigrinov disclose that the liquid crystal cell in the light valve is an LCoS cell. Levola discloses that Liquid Crystal on Silicon (LCoS) has

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been used in projection display applications (Col. 1, lines 48-49). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the LCoS technology as an inexpensive way of projecting an image on a screen (Col. 1, lines 48-50).

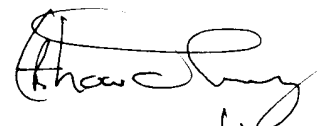
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 703-305-4767. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0530.



April 7, 2003


T. Choudhury
Primary Examiner